

CLAIMS

We Claim:

- 1 1. An interface between an automation host and a plurality of tools
2 used to perform a processing step, the interface comprising:
3 a single communications and process behavioral connection interface
4 to the automation host; and,
5 a plurality of virtual host interfaces, each virtual host interface from
6 the plurality of virtual host interfaces providing a communications and
7 process behavioral interface to one of the tools in the plurality of tools;
8 wherein the automation host can control and coordinate operation of
9 all tools in the plurality of tools via the single communications and process
10 behavioral connection interface.
- 1 2. An interface as in claim 1 wherein a number of virtual host
2 interfaces is variable depending upon a number of tools in the plurality of
3 tools.
- 1 3. An interface as in claim 1 wherein the plurality of virtual host
2 interfaces implement different communications and process behavioral
3 interface for different tools from the plurality of tools.
- 1 4. An interface as in claim 1 wherein the single communications and
2 process behavioral connection interface makes the plurality of tools appear
3 to the automation host as a single tool.

1 5. An interface as in claim 1 additionally comprising a state machine
2 scenario determinator that aggregates process state models for the plurality
3 of tools into a single process state model.

1 6. An interface as in claim 1 additionally comprising a state machine
2 scenario determinator that aggregates control state models for the plurality
3 of tools into a control process state model.

1 7. An interface as in claim 1 additionally comprising a state machine
2 scenario determinator that aggregates port state models for the plurality of
3 tools into a single port state model.

1 8. An interface as in claim 1 wherein a process variables set and
2 variable identification numbers of tools from the plurality of tools are
3 aggregated into a single process variable set and variable identification
4 number range for the plurality of tools.

1 9. An interface as in claim 1 additionally comprising a host
2 concentrator that aggregates communication message sets of individual
3 tools from the plurality of tools into a single communications message set for
4 the plurality of tools.

1 10. An interface in 1 wherein each virtual host interface from the
2 plurality of virtual host interfaces is compliant with the Semiconductor
3 Equipment Manufacturers Institute (SEMI) generic equipment model

4 (GEM) interface requirements.

1 11. An interface in 1 wherein the single communications and process
2 behavioral connection interface to the automation host is compliant with the
3 Semiconductor Equipment Manufacturers Institute (SEMI) generic
4 equipment model (GEM) interface requirements.

1 12. A method for connecting an automation host to a plurality of tools
2 used to perform a processing step, the method comprising the following
3 steps:

4 (a) providing a separate communications and process behavioral
5 interface to each tool in the plurality of tools; and,

6 (b) providing a single communications and process behavioral
7 connection interface to the automation host, including the following substep:

8 (b.1) allowing the automation host to control and coordinate
9 operation of all tools in the plurality of tools via the single communications
10 and process behavioral connection interface.

1 13. A method as in claim 12, wherein in step (a) a number of virtual
2 host interfaces is variable depending upon a number of tools in the plurality
3 of tools.

1 14. A method as in claim 12, wherein in step (a) the plurality of
2 virtual host interfaces implement different communications and process
3 behavioral interface for different tools from the plurality of tools.

1 15. A method as in claim 12, wherein in step (b) the single
2 communications and process behavioral connection interface makes the
3 plurality of tools appear to the automation host as a single tool.

1 16. A method as in claim 12, additionally comprising the following
2 step:

3 (c) aggregating process state models for the plurality of tools into a
4 single process state model.

1 17. A method as in claim 12, additionally comprising the following
2 step:

3 (c) aggregating control state models for the plurality of tools into a
4 single control state model.

1 18. A method as in claim 12, additionally comprising the following
2 step:

3 (c) aggregating port state models for the plurality of tools into a single
4 port state model.

1 19. A method as in claim 12, additionally comprising the following
2 step:

3 (c) aggregating a process variables set and variable identification
4 numbers of tools from the plurality of tools into a single process variable set
5 and variable identification number range for the plurality of tools.

1 20. A method as in claim 12, additionally comprising the following
2 step:

3 (c) aggregating communication message sets of individual tools from
4 the plurality of tools into a single communications message set for the
5 plurality of tools.

1 21. A method in 12 wherein in step (a) each separate communications
2 and process behavioral interface is compliant with the Semiconductor
3 Equipment Manufacturers Institute (SEMI) generic equipment model
4 (GEM) interface requirements.

1 22. A method in 12 wherein in step (b) the single communications and
2 process behavioral connection interface to the automation host is compliant
3 with the Semiconductor Equipment Manufacturers Institute (SEMI) generic
4 equipment model (GEM) interface requirements.